CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

# Mission Incident
# Santa Paula, CA
# Preliminary Summary of Air Monitoring Results
# January 6, 2015

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

## Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vacuum truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for January 6, 2015 07:00 to January 7, 2015 07:00.

## Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for chlorine ($Cl_2$), hydrogen sulfide ($H_2S$), percent of the Lower Explosive Limit (LEL), oxygen ($O_2$), particulate matter (10 micron particles, $PM_{10}$), sulfur dioxide ($SO_2$), and volatile organic compounds (VOCs), with instruments such as Gastec® pumps with chemical-specific colorimetric tubes, RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, an aerial site photo, and roaming monitoring locations are included in Appendix A.

CTEH® monitored RAESystems® AreaRAE units with a ProRAE Guardian system at four locations on the fence line of the facility within the work area. Unit 11 was deployed along the fence line of the facility between the 120 barrel tank truck and Mission Rock Road (primarily to monitor $Cl_2$ concentrations near the tank truck). AreaRAEs were equipped with sensors to detect $Cl_2$, VOCs, LEL, $H_2S$, and $SO_2$. Unit 11 recorded $Cl_2$ concentrations up to 1.8 ppm. CTEH® personnel in the area did not detect any $Cl_2$ with handheld instrumentation during this time. The sensor was inspected and recalibrated, and the $Cl_2$ detections documented as likely the result of electronic sensor drift. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

Particulate monitors were collocated with AreaRAE units 01, 02, 03, and 04 and data-logged to monitor $PM_{10}$. Table 3 summarizes data-logged particulate monitoring data.

Table 1: Manually-Logged Real-Time Air Monitoring Summary[1]
January 6, 2015 07:00 – January 7, 2015 07:00

| Location Category | Analyte | Instrument | No. of Readings | No. of Detections | Avg. of Detections | Detection Range[2] |
|---|---|---|---|---|---|---|
| **Work Area** | $Cl_2$ | Gastec 8La | 5 | 0 | NA | < 0.05 ppm |
| | $H_2S$ | MR+ / MR Pro | 11 | 0 | NA | < 1 ppm |
| | LEL | MR+ / MR Pro | 11 | 0 | NA | < 1 % |
| | $O_2$ | MR+ / MR Pro | 4 | 4 | 20.9 | 20.9 - 20.9 % |
| | $PM_{10}$ | AM510/Dusttrak | 6 | 6 | 0.02 | 0.01 - 0.054 $mg/m^3$ |
| | $SO_2$ | MR+ / MR Pro | 9 | 0 | NA | < 0.1 ppm |
| | VOC | MR+ / MR Pro | 11 | 0 | NA | < 0.1 ppm |

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 2: AreaRAE Air Monitoring Summary[1]
January 6, 2015 07:00 – January 7, 2015 07:00

| Unit ID | Analyte | No. of Readings | No. of Detections | Avg. of Detections | Detection Range[2] |
|---|---|---|---|---|---|
| Unit 01 | $H_2S$ | 5377 | 14 | 0.2 ppm | 0.1 - 0.7 ppm |
| | LEL | 5377 | 0 | NA | < 1 % |
| | $SO_2$ | 5377 | 0 | NA | < 0.1 ppm |
| | VOC | 5377 | 0 | NA | < 0.1 ppm |
| Unit 02 | $H_2S$ | 5359 | 11 | 0.1 ppm | 0.1 - 0.1 ppm |
| | LEL | 5359 | 0 | NA | < 1 % |
| | $SO_2$ | 5359 | 0 | NA | < 0.1 ppm |
| | VOC | 5359 | 525 | 0.1 ppm | 0.1 - 0.4 ppm |
| Unit 03 | $H_2S$ | 5374 | 50 | 0.1 ppm | 0.1 - 0.1 ppm |
| | LEL | 5374 | 0 | NA | < 1 % |
| | $SO_2$ | 5374 | 0 | NA | < 0.1 ppm |
| | VOC | 5374 | 19 | 0.1 ppm | 0.1 - 0.3 ppm |
| Unit 04 | $H_2S$ | 5368 | 101 | 0.1 ppm | 0.1 - 0.1 ppm |
| | LEL | 5368 | 0 | NA | < 1 % |
| | $SO_2$ | 5368 | 0 | NA | < 0.1 ppm |
| | VOC | 5368 | 2 | 0.1 ppm | 0.1 - 0.1 ppm |
| Unit 11 | $Cl_2$ | 5335 | 385 | 0.2 ppm | 0.1 - 1.8 ppm |
| | $SO_2$ | 5335 | 0 | NA | < 0.1 ppm |
| | VOC | 5335 | 70 | 0.1 ppm | 0.1 - 0.1 ppm |

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 3: AM510 $PM_{10}$ Monitoring Summary[1]
January 6, 2015 07:00 – January 7, 2015 07:00

| Serial No. | Location | No. of Readings | No. of Detections | Avg. Detection | Detection Range |
|---|---|---|---|---|---|
| **10601072** | AR01 | 5628 | 3144 | 0.006 | 0.001 - 0.294 $mg/m^3$ |
| **10503020** | AR02 | 5638 | 3519 | 0.007 | 0.001 - 0.353 $mg/m^3$ |
| **10704075** | AR03 | 5692 | 3787 | 0.008 | 0.001 - 1.371 $mg/m^3$ |
| **10601073** | AR04 | 5353 | 4777 | 0.005 | 0.001 - 0.544 $mg/m^3$ |

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*

# Appendix A

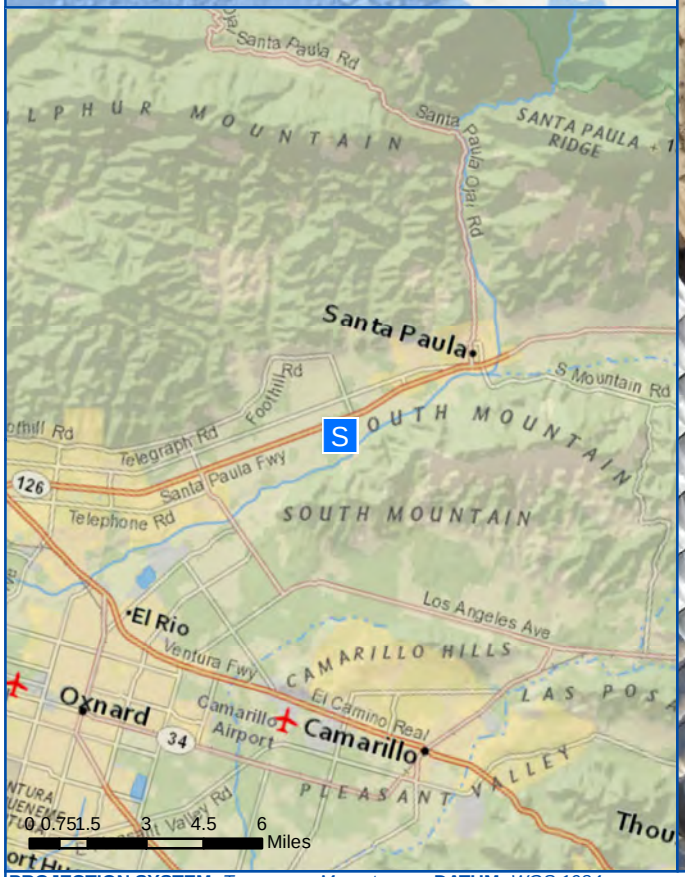
# Incident Maps:

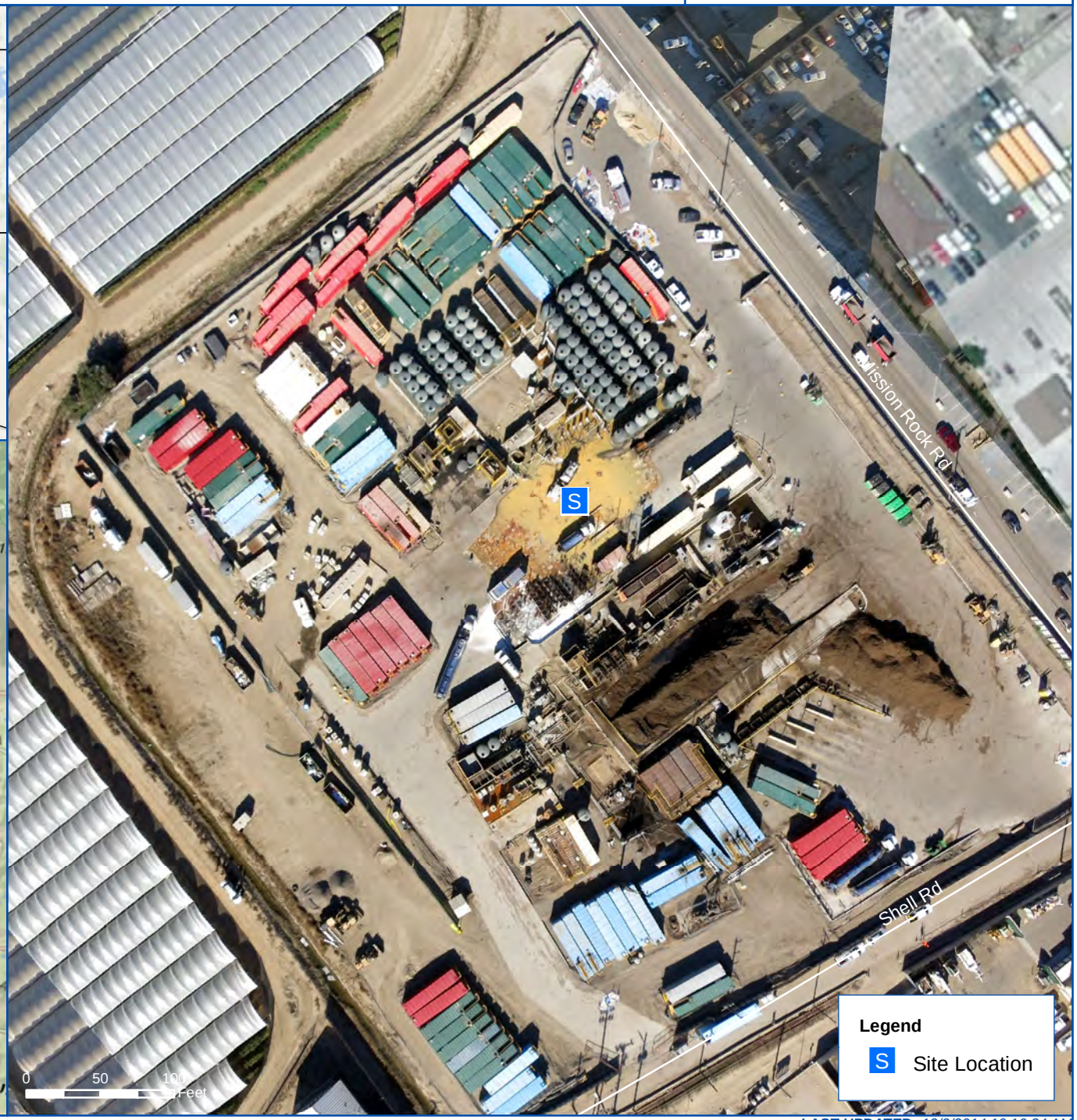
# Real-Time Air Monitoring Locations and Incident Site

# Site Location

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/2/2014 10:10:34 AM*

# Aerial Overview - 1/06/2015

## Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/7/2015 11:26:24 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

$Cl_2$ - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84*

**Print Date:** *1/7/2015 11:13:16 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

## $H_2S$ - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/7/2015 7:43:09 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

LEL - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84*

**Print Date:** *1/7/2015 7:46:41 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

$O_2$ - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/7/2015 7:53:36 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

## $PM_{10}$ - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84*

**Print Date:** *1/7/2015 11:11:22 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

## $SO_2$ - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84*

**Print Date:** *1/7/2015 11:12:15 AM*

# Manually Logged Real-Time Air Monitoring Concentrations

VOC - Jan 06, 2015 07:00 to Jan 07, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura


**PROJECTION SYSTEM:** *UTM13N* **COORDINATE SYSTEM:** *WGS84*

**Print Date:** *1/7/2015 7:40:38 AM*

# Appendix B:

# AreaRAE Trend Graphs, AM510 Trend Graphs, and Location Map

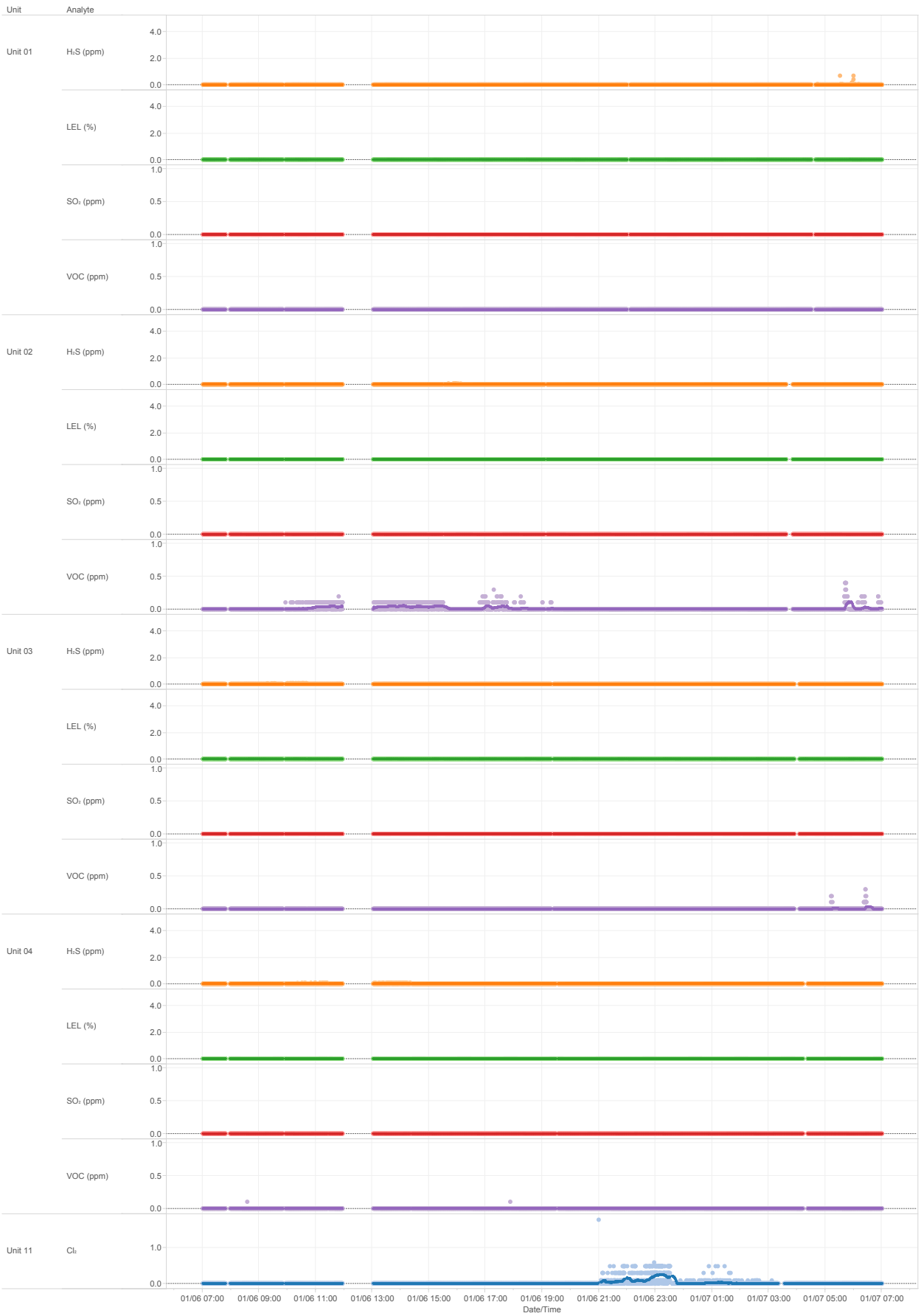
# AreaRAE and AM510 Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

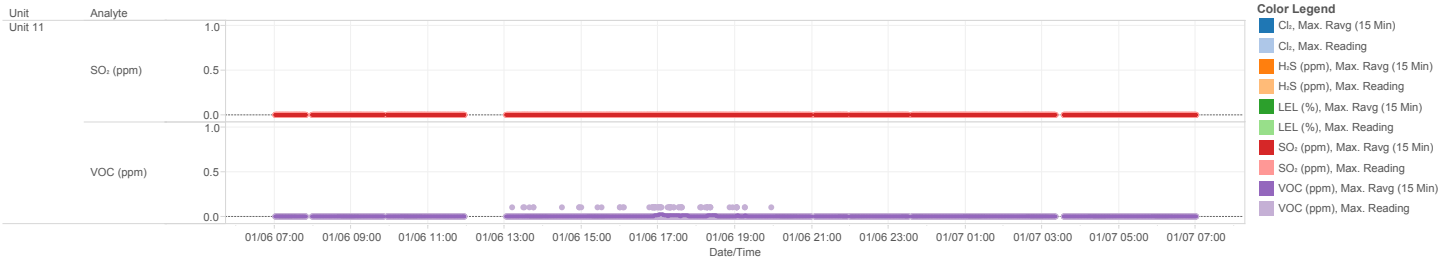

**PROJECTION SYSTEM:** *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/7/2015 11:24:31 AM*

**Patriot Environmental**
**AreaRAE Trend Graphs**
**1/06/2015 07:00 - 1/07/2015 07:00**



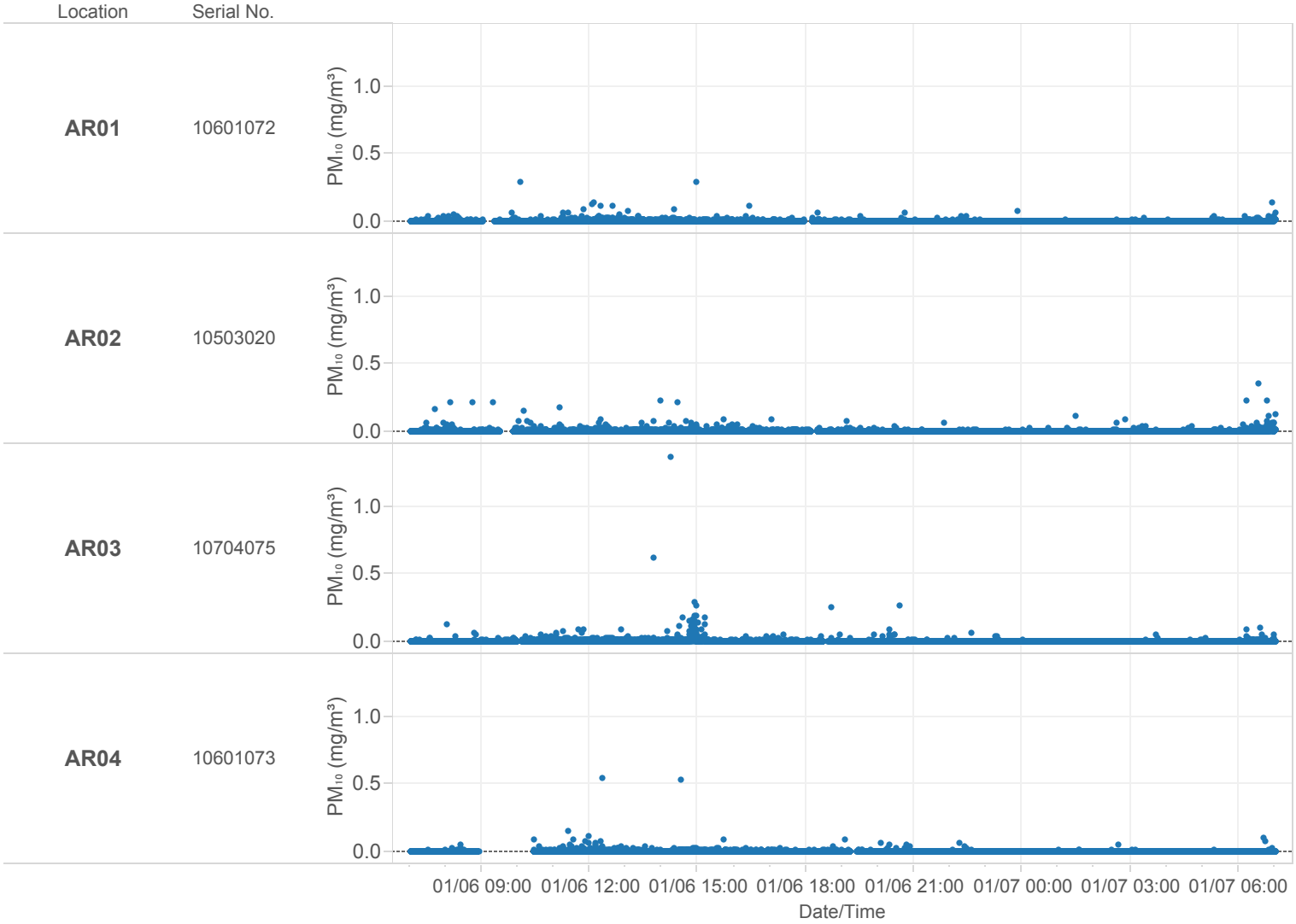

*- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*
*- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"*

**Patriot Environmental**
**AreaRAE Trend Graphs**
**1/06/2015 07:00 - 1/07/2015 07:00**




*- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*
*- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"*

# Patriot Environmental
# MISSION INCIDENT
# Datalogged AM510 ($PM_{10}$) Summary
# 1/06/2015 07:00 - 1/07/2015 07:00




*- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*